



The Eastham Energy Committee hosted two (2) “Wind Energy for Eastham” public education sessions (Nov. 18th & Dec. 2nd) regarding the wind turbine project in North Eastham. During the Q & A sessions, the following questions were asked:

1. Has an avian study been conducted?
ANS: A Wind Energy Avian Assessment was completed in August 2006 and is available at MTC at: http://masstech.org/Project%20Deliverables/Comm_Wind/Eastham/Eastham_Phase_I_Avian_Risk.pdf or through the Eastham Website at: www.eastham-ma.gov.
It says: “The proposed project is likely to be of minimal risks to birds.”
2. What about lights at night?
ANS: The FAA guidelines will determine what safety lighting is necessary. No other lighting is being considered. We don’t know yet what lighting will be required. However, all structures more than 200 feet (61m) tall must have aircraft warning lights. We expect that lighting will be limited to the nacelle hub and not the blade tips. Typically, there is one medium-intensity red blinking light at night. A design that we would expect could be used here is to locate the light in the *center* of the top of the nacelle, which makes the light easy to see from airplanes but harder to see from the ground.
3. What about protection from high winds? Do the turbines cut off?
ANS: Yes, typically the turbine will cut-out in wind speeds above 25 m/s (55 mph). The turbines will pitch their blades out of the wind so there isn't much lift on them from the high winds. They also engage a mechanical brake on the drive train to keep the rotor from spinning. They will automatically re-engage when the wind gets low enough.
4. This is a potential archaeological site. Have we considered this?
ANS: Yes, an archaeological review and permitting will be conducted.

5. What is the financial advantage to the Town?
ANS: The Town expects to, at least, offset the entire cost of the town's municipal electric bill (currently \$170,000 per year) plus capture an annual percent of the revenue from electricity and REC sales. We see a multi-million dollar benefit to the town over the life of the lease.
6. Are property values affected?
ANS: Domestic & International studies indicate that property values are not negatively affected by installation of land-based wind turbines. See REPP Study – "The Effect of Wind Development on Local Property Values" at Wind Turbine Info on the Eastham Webpage at www.eastham-ma.gov
7. In the "fall zone", what about the effect on people's property within the fall zone? How close to houses will the "fall zone" be? Black & Veatch pointed out that only one turbine has ever fallen and that was because of a fault in the foundation, a lesson now learned by installers of turbines.
ANS: The Zoning setback or 'clear area' from an inhabitable building will at least be equal to the height of the structure. Other siting requirements will be determined by a new Wind Energy Facility By-law.

Location Questions:

8. Why the North Eastham site where there may be an effect on property values? Why not at Town Hall or DPW site?
ANS: The Town Hall site is too small for a megawatt-plus turbine and we would lose the Field of Dreams. The DPW site was eliminated because the electric load is too small. A single turbine, private-ownership project is not financially feasible.
Since, as a municipality, we are prevented by law and regulations from selling excess electricity we need a private developer/owner model for our turbines. All of these considerations made the North Eastham site most feasible.
See Question # 6 for an answer to the property values question.
9. You said that we had considered 6 turbines on the site, but had scaled back to 4. Why?
ANS: Site F is on town-owned land but in the National Seashore and most likely not developable.
Site E ended up being too close to the power lines (300 ft).

10. If neighbors love wind turbines so much, why did you choose to abandon the site closest to the neighbors? He has read that they do disturb people—vibration and strobe lights.

ANS: Vibrations are not generally a problem with modern turbines. Every modern turbine has a vibration sensor to identify and minimize any vibrations.

Our lighting will be determined by the FAA. No other lighting is being considered. See # 2 above.

Studies have shown that neighbors of wind facilities have considered them as positive influences in their community.

11. Site F will have less impact on neighbors than Site A. We shouldn't throw it out just because it means working with the Seashore.

ANS: We considered site F as a fifth turbine under the “more are better” philosophy, not as a replacement for site A. We recently re-explored the possibility of site F with the National Seashore administration and learned that easements and permits would be very difficult to obtain.

12. Could you put up balloons to show exactly where the top of the turbines would be? What can you do to show the exact height?

ANS: Kristen Goland (MTC) explained that because a balloon is on a rope and subject to wind, it would not be a good indication of height. Sean Tilley (Black & Veatch) said that a crane exactly like the ones used to install the turbines could be put on site, but that would be very expensive and it would be difficult to get one in an exact location because most of the area is currently wooded. Kristin further suggested that a bus tour to Mass Maritime Academy and Hull to view turbines there would be a good way to show a turbine and its proximity to residential areas. We are exploring the bus trip option.

13. In the photo simulation of the towers, we did not have a view from Oak Leaf Road or from Saltwind Drive? Does this mean they can not be seen from there?

ANS: We found it difficult to find a location on Oak Leaf Road where they might be seen enough to create a simulation. We took pictures in the summer and winter. The trees are dense and tall in that neighborhood. We have requested a wire diagram simulation like the Naust Beach simulation.

14. This is an area designated as a “Water Resource Protection District”. There will be oil and lubricants that would have a negative impact. Would wind turbines exclude the use of the land for a well field?

ANS: We are working with Eastham’s Water Resources Advisory Committee and their consultant, Environmental Partners, to coordinate projects in a mutually beneficial manner. These projects can co-exist. In fact, the turbines could be the source of the electricity to run the wells.

Turbines house oil-like (non-petroleum) fluids for lubrication and cooling. We will ask for environmentally friendly fluids in our RFP. Oil leaks are normally contained within the nacelle or tower. In addition, we will call for a containment system at the base.

15. Was the 11 acres off Brackett Road for the town center project considered for a wind farm?

ANS: Considered but not selected: too small and too near buildings. Each turbine requires five (5) acres and at least twice that space between multiple turbines. Separation between turbines is required for effective wind utilization.

16. Is there a possibility of turbines elsewhere in town? Where?

ANS: The DPW is an option for a municipal turbine in the future if the laws and regulations change. Municipal turbines will require five (5) acres of town-owned land limiting future municipal installations.

17. How many acres are there in the North Eastham site?

ANS: Each turbine requires five (5) acres. The four (4) lots being considered total approximately 28 acres. Town-owned land in the general area of the turbines is estimated to be 100 acres.

18. What is the rationale for 3 to 5 acres and for the setback?

ANS: Most zoning consultants and other area town by-laws recommend 5 or more acres. The setback (clear area) of an 80 meter turbine covers nearly 11 acres. In addition, siting requirements for multiple turbines require specific distances and configurations.

19. What is the square footage needed for a turbine.

ANS: A clearing of 60 meters (197 ft) diameter surrounding the base of the turbine on a five (5) acre lot.

20. Installation of 4 turbines is too big. It will scare people away. You should start with just one.

ANS: Potential developers indicate that a single turbine is not financially attractive.

Zoning

21. Aren't there zoning issues?

ANS: Our Zoning By-laws do not specifically allow or prevent a wind facility. A special permit from the Zoning Board of Appeals will be required. A new Wind Energy Facility by-law has been recommended by the Energy Committee and is being considered by the Planning Board.

22. Will the new Zoning By-Law be based on the models of CLC and CCC?

ANS: The CCC/CLC Model Bylaw for Land-Based Energy Conversion Facilities was reviewed. In addition, the Zoning bylaws of other Cape Cod towns were considered.

Q: When can we see it?

ANS: The Planning Board is currently reviewing it in public sessions.

Noise

23. What about noise from the turbines?

ANS: Turbines do make some noise and the impact is well studied. Some mechanical sound comes from interaction of turbine components and other aerodynamic sound is from the 'whooshing' of the blades. An operating modern wind facility at a distance of 750 to 1000 feet is no noisier (35-45 dB) than a kitchen refrigerator or a moderately quiet room. At its base, the sound level is about equal to a normal conversation (60dB).

24. Will our noise study cover energy in the infrasonic range (a range below audible sound)? He had heard it could be harmful to health.

ANS: Yes, there can be infrasonic sound. Studies indicate, however, that the sounds in the infrasonic range are not a health factor with modern turbines.

25. **Statement** by the head of Community Wind Power LLC, the successful bidder for Fairhaven. If the turbines cause noise, it is because there is an operating problem, and such problem must be fixed. There are vibration sensors to alert the operator to such problems. Also, he stressed the importance of economies of scale. More is definitely better.

Impact on area

26. How will it affect the area?

ANS: Some tree clearing will be necessary for construction, access roads, and maintenance. Three (3) gravel access roads will be necessary for construction and maintenance.

27. Will it industrialize it?

ANS: No. Except for the turbines themselves, minimal on-site equipment is required. The sites are wooded with limited access. The turbines will be over 1,000 feet apart.

28. Are we likely to have tour buses to see the turbines? I am concerned that little tourist shops will be built in the area.

ANS: Unlikely. By comparison, multiple tour buses stop daily at Windmill Green to visit our historic windmill. Tourist shops have not developed in that area. While modern turbines are a viewing curiosity, the Nauset Road area is not conducive to tour bus traffic.

29. Will trees be removed from large tracts of land?

ANS: No. Some tree clearing will be necessary for construction, access roads, maintenance, and a clearing of 60 meters (197 ft) diameter surrounding the base of the turbine.

30. What about access roads to the turbines, during construction and afterwards for maintenance?

ANS: It is expected that there will be three (3) unpaved access roads to the turbines for installation and maintenance purposes. The three roads will connect to the maintenance road on the electric utility easement beside the bike trail.

31. When visitors come to gawk, they'll see some pretty ugly looking pits. Is there any way the town can beautify the area?

ANS: We share the same concern but it outside of our charge and our scope to consider. They are on private property. We'll pass your concern to the Town Administrator.

Production Tax Credits and Renewable Energy Credits

32. Who earns the Production Tax Credit?

ANS: The developer/owner will earn the Production Tax Credits (PTC).

33. The REC is very valuable. Can we guarantee that 100% will go to Eastham? Will MTC guarantee it?

ANS: RECs are earned by the developer/owner, in our case, the private developer. RECs are an integral part of the financing package for the developer. RECs will not "go to" Eastham. The town will benefit from the RECs by a negotiated revenue sharing agreement with the developer/owner. Through its Standard Financial Offer, MTC will guarantee purchase of the RECs as an aid to make this project financially.

Q: How does Orleans handle it?

ANS: Kevin Galligan said that Orleans has not issued an RFP and is keeping its options open.

34. What are the next steps?
ANS: Further wind analysis (ongoing); more public education; a noise impact study; further permitting analysis; an electrical interconnect study; National Seashore review; develop & issue Request for Proposals (with Land Lease Agreement) & evaluate responses; a new Wind Energy Facility zoning by-law; and more, all culminating at Town Meeting, May 7, 2007.
35. Will the public be able to comment on the Request for Proposals (RFP) before it is released? Who will prepare the RFP?
ANS: The RPF will be presented to the Selectmen for approval at a Selectmen's meeting where public discussion is welcome. The RFP is being developed under a grant from Cape Light Compact by a Boston-based firm with specific experience with wind energy facility proposals.
36. Global warming may have an effect on wind in the future. Might it make the turbines less useful? Is there a history of wind data available for 20 to 30 years?
ANS: No one really knows, but Black and Veatch commented that "studies indicate that Global warming would probably increase the winds. Wind in our area has been studied for about 20 years."
37. How high is the cell tower?
ANS: The North Eastham cell tower is 60 meters (197 feet) tall. Our preferred turbine tower height is 80 meters (263 feet). The max-balde height is 400ft.
38. Who can we invest in to take advantage of this booming new industry?
ANS: We are not financial consultants. This is outside the scope of our charter. GE is listed on the NYSE. Many turbine manufacturers are foreign companies. Clipper is new American manufacturer but may be private.
39. We should contact our state reps to enable municipal ownership.
ANS: Yes, contact your reps and senator in support of new net metering bill which is stuck in committee. Committee member, George Katz, made a plea to the audience to contact state legislators in support of clean energy.
40. Who will pick up the liability insurance? Are we sure these won't cost Eastham a dime?
ANS: Liability insurance will be required of the developer/owner.
41. Has anyone "Made it around the track?" Doing what we're doing now and finished to completion?
ANS: Not yet. Orleans, Falmouth, and Lynn are in various final stages. Fairhaven issued an RFP and received 2 bids.

42. What have been the negatives in other communities/projects?
ANS: Mass. Maritime had strobe light complaints: too bright and too quick. FAA is cooperating for an acceptable lighting solution.
43. Re: Hoosac, in Berkshire County. What about Green Berkshires comment that wind power does not make a good neighbor?
**ANS: "Green Berkshires, Inc. is dedicated to protecting from inappropriate development the mountains and ridgelines of the Berkshires" (<http://www.greenberkshires.org>).
Kristine Goland (MTC) advised the audience to rely on studies and reports performed by scientists and engineers of reputable firms and universities.**
44. Plymouth Nuclear Power Plant may shut down some day. How will we make up for that loss of power?
ANS: One answer is clean, renewable WIND ENERGY!
45. How long will the turbines last? Can they be upgraded as technology changes?
ANS: Turbines have a design life of at least 20 years. GE is claiming their turbines can last 50 years, but the technology is still too new to know about that. Generally there is not a way to "upgrade" a turbine, nor can a newer turbine be placed on an old tower or foundation because both of those items are designed specifically for the machine they support.
46. Can we put up a residential turbine now?
ANS: There are no current zoning by-laws that permit or prohibit wind turbines. However, any new structure over 30 feet or non-conforming must get a special permit from the Eastham Zoning Board of Appeals.
47. What is the feeling of the townspeople toward the project?
ANS: To date we have had a generally positive response. An Article authorizing the lease of land for a wind turbine passed by over 2/3rds vote last May at the Annual Town Meeting. Other Articles will be on the Warrant for the May '07 Annual Town Meeting. The voters will decide.
48. Aren't there large efficiency losses going from variable ac to dc and back to ac?
ANS: Not with modern turbines. There are some losses, yes. Most turbine designs sold in the US do not use power electronics, and so the power is generated at 60 Hz AC directly using an induction generator and a mechanical gearbox. There are a few designs in use in large turbines that do indeed convert the power to DC then back to AC, but none of the turbines we considered for the project currently do that to our knowledge. As power electronics improve, it is possible that could change. Only GE goes to dc and back, and they do it because they think it is more efficient given the way they configure the system. They do use power electronics, but only on the generator's field windings.